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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/992,344 | 11/14/2001 | David K. Anderson | FIS9-2001-0151-US1 | 7187 |

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INTERNATIONAL BUSINESS MACHINES CORPORATION
DEPT. 18G
BLDG. 300-482
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HOPEWELL JUNCTION, NY 12533

EXAMINER

SEFER, AHMED N

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 06/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/992,344

Applicant(s)

ANDERSON ET AL.

Examiner

A. Sefer

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-22,25 and 28-30 is/are pending in the application.
- 4a) Of the above claim(s) 11-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-10,21,22,25 and 28-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed on 4/15/03 has been entered and claims 5, 23, 24, 26 and 27 have been cancelled.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1, 6, 7 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Nozick (FR 2 575 864).

Nozick discloses in fig. 2 a fuse structure comprising an insulator layer 1 or comprising an interface wall wherein said interface wall further comprises a first side wall 71, a second side wall 72, and an inner wall (unnumbered), wherein said inner wall is disposed within a gap (as in claim 7); an inverse-U shaped fuse extending through said insulator layer to an underlying wire layer; wherein a portion of said fuse surrounded by air (as in claim 21) is positioned external to said insulator or perpendicular to and above said insulator layer (as in claim 6), with a gap

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juxtaposed between said insulator and said portion of said fuse and wherein said fuse comprises a continuous conductive element.

4. Claims 8, 10 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Nozick (FR 2 575 864).

Nozick discloses in fig. 2 a fuse structure comprising an insulator layer 1 or comprising an interface wall wherein said interface wall further comprises a first side wall 71, a second side wall 72, and an inner wall (as in claim 10); an inverse-U shaped fuse extending through said insulator layer to an underlying wire layer; wherein a portion of said fuse is positioned external to said insulator, wherein said portion of said fuse is perpendicular to and above said insulator layer or surrounded by air (as in claim 22); and wherein said fuse comprises a continuous conductive element.

5. Claims 25, 28 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Nozick (FR 2 575 864).

Nozick discloses in fig. 2 an integrated circuit structure comprising a wiring layer having wiring elements 2 and 3; an insulator layer 1 covering said wiring layer; an inverse-U shaped fuse extending completely through said insulator layer and being connected to said wiring elements; wherein said insulator forms an external surface of said integrated circuit structure and a portion of said fuse extends beyond said external surface, and wherein said fuse comprises a continuous conductive element.

As to claim 28, Nozick discloses in fig. 2 said fuse forming a circuit with said elements.

As to claim 29, Nozick discloses wiring elements internal to integrated circuit structure and separated from an external portion of said integrated circuit structure by said insulator layer.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-4, 9 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nozick in view of Clinton et al. US Patent No. 6,055,150.

Nozick discloses the device structure as recited in the claims, but does not specifically disclose an electroplated and electroless fuse element.

Clinton et al disclose (see figs. 1-8, col. 6, lines 11-50 and col. 12, lines 45-67) an electroplated fuse element. Therefore, it would have been to one skilled in the art at the time the invention was made to use an electroplated fuse element, since that would provide the required resistivity and melting point necessary for a better fuse function.

Regarding claims 3, 4 and 9, Clinton et al disclose electroplated/electroless plated fuse element (as in claim 3) having a thickness, which falls within 100 angstroms to 350 angstroms (as in claim 4).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Brintzinger et al. US ref. 6,495,901 disclose a multilevel inverse U-shaped fuse structure.

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9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (703) 605-1227.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601.

ANS
June 20, 2003